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Morris Ebert

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THE

CENTURY CEMENT BLOCK MACHINE

Makes Cement Stone for Commercial Uses



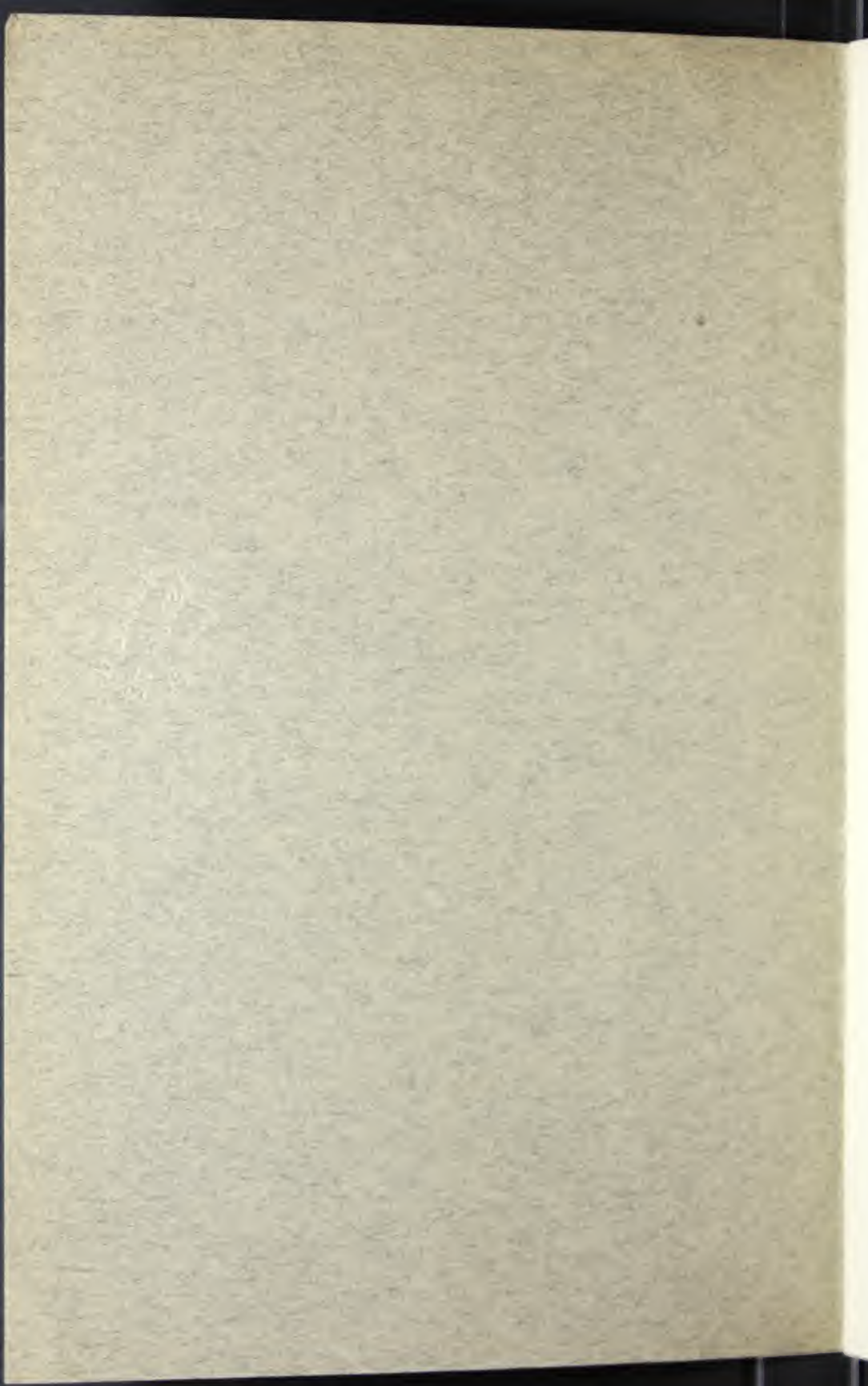
Manufactured by

Century Cement Block Machine Company

20 Canal Street

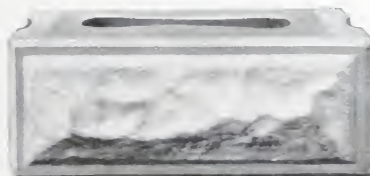
Rochester, N. Y.

THE FRANKLIN INSTITUTE
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The CENTURY CEMENT BLOCK MACHINE

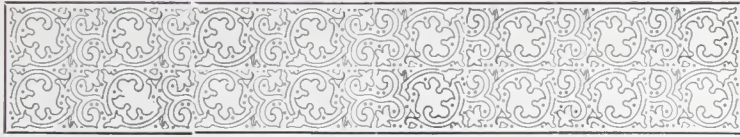
MAKES stone blocks that can be copied in any form after natural stone, giving an exact reproduction of any style, plain, rock face, decorated surface, or any combination to suit the fancy of the builder. Houses, factories, warehouses, churches, barns, silos, curbing, etc., can be built with these blocks at a cost of from 40 to 80 per cent. less than cut stone, and 15 to 60 per cent. less than kiln-run brick. : : : : : : : : : :



Manufactured by
Century Cement Block Machine Co.,
Rochester, New York



Showing Method of Removing Blocks From Machine.



THE BUILDING PROBLEM IS SOLVED

The discovery of cement and its many uses removes the apprehension that the building material of this country was being exhausted. Lumber, once so plentiful, is now disappearing. Its scarcity and increased cost has for years vexed the mind of the builder, the home maker and the farmer. Necessity is truly the mother of invention. The Creator has, for centuries, hidden in the earth an illimitable supply of material which man may so fashion that lumber, brick, stone and iron become secondary, because they are more expensive and are not so readily transformed into innumerable shapes which the latest discoveries in cement have rendered possible. Cement is no longer a secret hidden in the womb of Nature, but is a simple, plentiful and wonderful substance. Most every state abounds in the material from which cement is made, and it has already been the source of as much wealth as iron, coal, stone, and even silver and gold. Marl pits, ridges and beds have been found on scores of farms, and their owners, unaware of its existence or value, have sold their birthright for a mess of pottage, and parted with their land to some speculators, who have made fortunes from a few acres.

Marl is the constituent part of all cement, and when mixed with other natural resources makes cement, called low land cement; lime rock is also used in making cement.

Upon this wonderful discovery of cement man has, by invention, found a thousand uses to which it can be applied. We are daily reminded of cement in every city sidewalk, which is superior to all others. That, however, is now an old story, and in view of its qualities,

it is no wonder that inventive minds have fashioned it into shapes never dreamed of fifty years ago, except, as we shall show, it is the revival of an art lost thousands of years ago.



PANTHEON AT ROME

The Pantheon at Rome is, to-day, the most perfect classical building, the best preserved monument of ancient Rome. It is constructed of concrete. The walls, which are circular, are 20 feet thick and its hemispherical dome, measuring 142 feet 6 inches in diameter, consists of one solid mass of concrete. It has endured for nineteen centuries, and by reason of its great strength and durability shows not a single crack to-day.

A LOST ART

The Egyptians were probably the first cement makers, nearly 4000 years ago. But nothing important was discovered until two thousand years later, when the Romans discovered its great value as a building material, and found very extensive use for it in building palaces, vaults, etc. The pyramid of Cestius and the great platform in Nero's palace, which remain to-day, were made of concrete.

But the art perished with their supremacy and history records nothing important, either in the manufacture or use of cement, until

1756, when Col. J. Smeaton, a celebrated English engineer, discovered that a certain lime-stone, containing a percentage of clay, produced, on being calcined, a cement. Smeaton showed his faith in his material by erecting the famous Eddystone light-house of it. The work was completed in 1759 and has stood the fiercest storms for nearly 150 years, unharmed and without the least sign of decay.

With this discovery, the real history of modern cement manufacture commenced.

QUALITIES IN CEMENT

Its chief qualities are its hardness, durability, solidity, freedom from all cracking, since it has no lines of cleavage, and resistance of all atmospheric influence, frost or heat, rain or sun. It will stand the ravage of fire better than any other building material and will grow stronger with age. Repeated tests and practical experiments show conclusively that cement concrete will outwear stone.

Mr. James Renwick, of New York City, who has gained a national reputation by building the Cathedral and Grace Church, New York City; the Smithsonian Institute and the Corcoran Art Gallery, Washington, D. C., and Vassar College on the Hudson, says:

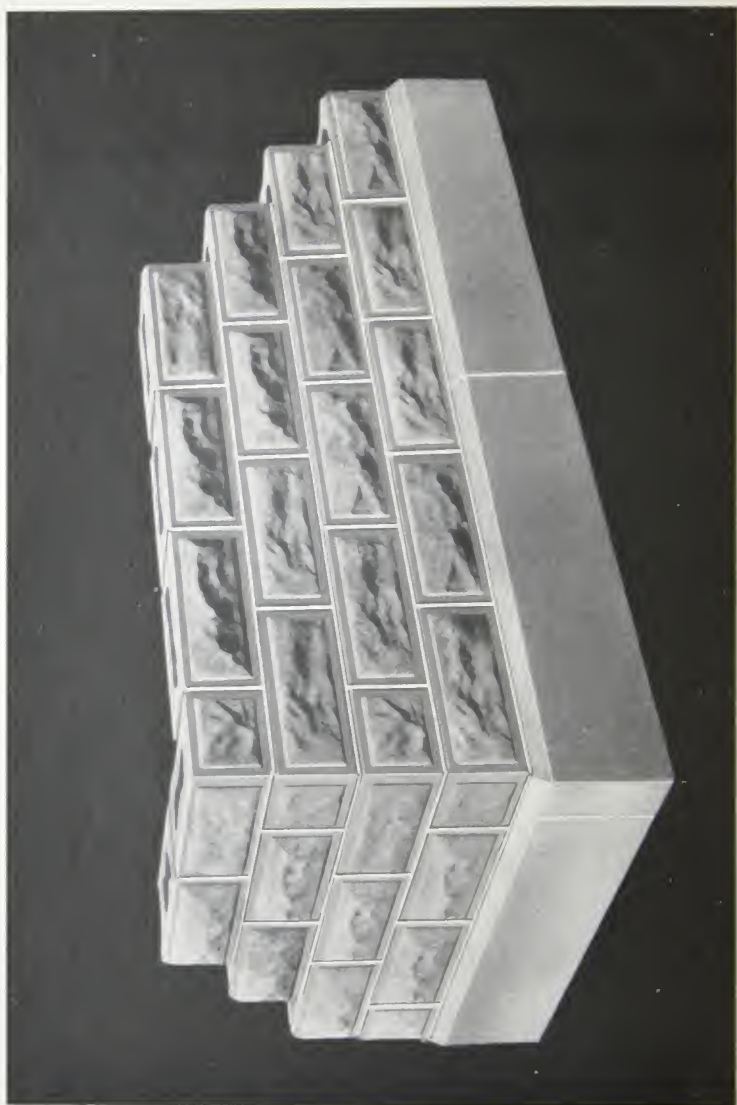
"Cement concrete not only outwears sandstone, but equals marble or granite in its durability. It is, in addition to its durability, the cheapest known material."

City Engineer Ericson, of Chicago, favors concrete in place of brick for all underground work. He says:

"Recent tests of concrete for underground work have proved it to be superior to brick both in cost of labor and material and in its durability. It is, therefore, very probable that next year will see a much more extensive use of this material than in the past. In the East concrete tunnel work is fast gaining favor, and though there is little construction of this character to be done in Chicago for a time, it is likely it will be concrete material rather than brick."

Mr. Leonard C. Wason, president of the Aberthaw Construction Company, of Boston, Massachusetts, and an engineer of national repute, says:

"The question of a concrete building not being as practical as other material has no support in practice. The given life of an ordinary steel building is about thirty years. It has been found upon tearing out portions of these buildings that by rust the area has been diminished to a dangerous degree. In concrete this condition cannot exist. It is like the everlasting hills. Why, the structures of ancient Rome that are standing to-day are of concrete."



A Group of Portland Cement Blocks and Water Table, Made With Century Machine.

A FEW OF THE PROMINENT CEMENT BUILDINGS

The Casa-Monica Hotel, the Ponce de Leon Hotel of St. Augustine, Florida, the Green Hotel, Pasadena, California, the 15-story Ingalls Building, Cincinnati, Ohio, and the National Galleries of History and Art, now under construction at a cost of \$10,000-000.00, are built of Portland Cement.

THE DEVELOPMENT OF CEMENT BLOCK MACHINES

It has been within recent years that inventors have produced these machines for the making of artificial building stone from cement, and the growth of the business has been phenomenal.

To-day companies are being formed in all parts of the world to manufacture cement blocks, and wherever these machines are installed can be seen a rapidly increasing number of beautiful buildings erected of cement blocks.

Cement blocks, made with these machines, can imitate natural stone in any form, giving an exact reproduction of any style, rock face, plain, decorated surface, or any combination to suit the fancy of the builder, and at a cost from 40 to 80 per cent. less than cut stone and 15 to 60 per cent. less than brick. Taking into consideration the beauty, strength and enduring qualities of cement blocks and their cost compared with stone, brick, wood, steel or any other building material, it is easy to understand why it is so fast becoming the building material of the world.

It will be but a short time when these machines will be in operation in every city, town and hamlet and the parties who enter the business early are bound to find it most lucrative.

CEMENT'S MANY USES

The uses of cement cover almost everything that can be made of wood, stone, brick, iron or steel. It is being used in the greatest constructions of the world, in building houses, stores, warehouses, factories, cold-storage plants, foundations, barns and silos, and even in the interior, such as hearthstones, fire-places, porticos and frescoing. Hollow partitions, which no sound can penetrate, no chance for fire or vermin, can be made with less expense than studding, lath and plaster. It is used for steps, pillars and staircases. In



Residence of Elias Lemon, Owen Sound, Ontario, Canada, Built of Portland Cement Blocks.

factories the most solid foundations for engines, boilers and heavy machinery are made of cement, and wherever solid bases are needed cement cannot be equalled.

Within recent years the increased tonnage of engines and freight cars has made it necessary for the railroad companies to procure the most solid and durable material for the construction of bridges, culverts and abutments. Engineers have given cement the preference, knowing by scientific tests that it is the best. Hence, wherever in building it has been to their advantage to secure the strongest and most durable material, they have been and still are using cement. This is the highest possible reference for the use of the blocks we are making.

The inventor, after years of study, has perfected the CENTURY CEMENT BLOCK MACHINE, which enables even the unskilled to manufacture beautiful blocks. It was our aim to produce something which is within the means of ordinary men and which can be handled by one man.

With the CENTURY a solid block can be made, and by using our core thirty per cent. of the weight can be removed without weakening the block, and leave a continuous air space through the entire wall, including corners. A stone made by the CENTURY is stronger, more durable, than natural stone, and is fifty times stronger than the best brick.

USES FOR THE BLOCKS

The uses for these blocks cover the whole field of building in every department, from palaces, houses, factories, barns and warehouses.

By the CENTURY machine blocks can be moulded in halves and quarters. There is no size or shape which cannot be produced.

The consideration which makes buildings erected of cement blocks more preferable than those buildings erected of stone or wood is that they are as handsome, fire and frost proof, warmer in winter, cooler in summer, and cost less to construct. The sanitary conditions are superior.

Cement blocks do not decay, and as proof we again remind you that the art of cement making was known to the ancients in Pompeii and Nineveh, who built their palaces of this material, and those structures, although in ruins, show that decay is unknown.



A Group of Blocks Made by Two Inexperienced Men the First Day They Operated the Century Machine.

You can be a benefactor of posterity, for whatever structures you may erect of cement blocks will stand one thousand years without any sign of age or decay.

With these blocks there can be no fear of fire or vermin. When using them for inside work there is a perfect ventilation. We would advise putting in registers, one on each side and end of the house; also register inside of each room; then you can secure perfect ventilation without draughts from the windows. Be sure to put in registers inside and outside.

It is not necessary to have a skilled mason to manufacture blocks as they can be made by the commonest laborer.

WHO SHOULD HAVE CENTURY MACHINES

Every contractor, builder, laborer and farmer should see that it is for his interest to have our machines. The farmer can join with his neighbor and build his own house, barn, hen-house and silo. Contractors and builders do not need any urging. They see the necessity of owning them.

PREPARATION OF MATERIAL

We have studied to ascertain the simplest way in which blocks can be made. It can be readily understood by any ordinary person.

Secure good sharp gravel, which contains a small amount of fine sand. Do not screen. Stones as large as a hen's egg may be used. In solid blocks, where there is no core, stones as large as your fist can be used in the center of the block, with plenty of sharp sand. The more stone the less cement and the stronger the block. When there is some sand with the gravel, this sand, when tamped in the machine, will go to the faces of the block and the stone will not show. Do not use sand or gravel that has any surface dirt, hardpan or clay, or any particles of decayed wood or other foreign substance.

MAKING CEMENT BLOCKS

Lay down some boards, make a platform about 14 feet long and 8 feet wide. Place the CENTURY machine on the platform near the mixture. A boy 15 or 16 years old can do as good work as a man. Brush off the inside of the machine with a small broom



Showing Complete Outfit of One Machine for Making Hollow Cement Blocks.

before making each block and place the board, which should be damp, in the bottom of the machine, closing it up. Take 60 shovelfuls of sand and gravel, spread it out three to four inches in thickness and then take a 100-pound sack of cement and spread it over the sand. Now shovel it to the center of the boards in a ridge, say eight feet long and two feet wide; commence at one end and shovel it back. You should have two shovelers, one at each end, and back of the shovelers a boy or man with a rake. As it is thrown back rake it thoroughly, and by so doing, handling it twice, it will be well mixed. If it does not show a good even color, give it another turn, for much depends upon getting the cement evenly distributed. When it is in a ridge, hollow it out on top and put on water enough to moisten it well. Then shovel it as before. Have it well mixed before shoveling it into the machine. Then shovel some on each side of the core and tamp it well as it is shoveled in. Care should be exercised in filling the machine to tamp thoroughly, as this increases the strength of the block and requires less cement. Be sure to tamp the corners and face so that the rock face will be solid, then it will not stick to the machine. If it is too wet or not well tamped, it is apt to stick and cause trouble and waste. Have the machine well filled after tamping, then take the hopper and level it off even with the machine. Raise up the handles inside of the core; pinch the core together so it will be free from cement; then pull the core out carefully, let down the doors and take the pole and hooks, clasp the hooks under each end of the board and carry it away. If it is well tamped it will not break unless suddenly jarred. Again brush off the inside of the machine and put in another board, then place the core, shutting up the machine and repeat the operation.

Three men, when they have had two or three days' experience, should make 150 blocks each day. The block most used is 8 x 10 x 20, and when made hollow and well dried will weigh from 76 to 80 pounds. 12 to 15 machines and 8 to 9 men will make a block a minute. To do this, place the machines in a row, then have a place to mix on each side of the machine. Take three men and have them do nothing but mix, and as they are mixing one bed, have one good active man shovel for two men to tamp, another man to smooth off the top, draw the core and let down the doors, two men to carry away the blocks and one boy or man to brush



New Dairy Building, Toronto Industrial Exhibition, Toronto, Ont. Constructed Entirely of Portland Cement.

"I believe that this is the best building for dairy exhibition purposes to be found anywhere in the world; and I say this after having been in all the prominent buildings erected for that purpose on this continent, and with a fair knowledge of similar buildings in the Old Country."

J. A. RUNDICK,

Chief of the Dairy Division of the Department of Agriculture for the Dominion of Canada.

"The dairy building is a splendid object lesson, and the finest building of its kind in America."

PROF. ROBERTSON,

Commissioner of Agriculture for the Dominion of Canada.

off the inside of the machine and put in the board and core and close up the doors. In this way you can make blocks enough to construct a large building in a short time, as a block 8 x 10 x 20 represents 20 brick. Any man can lay more cubic feet of these blocks in a day than 3 men can of brick or stone. The cost of a hollow block 8 x 10 x 20: Cement four cents, labor three cents, water and sand is the balance.

If you can get fine cinders, take four parts cinders, two parts sand and one part cement. Mix cinders and sand together; mix them well before adding the cement, then add the cement. Mix well before adding the water, then wet and mix thoroughly. Do not get it too wet as the cement will wash from the gravel, settle to the bottom and will not make as strong and smooth a block.

CURING OR DRYING

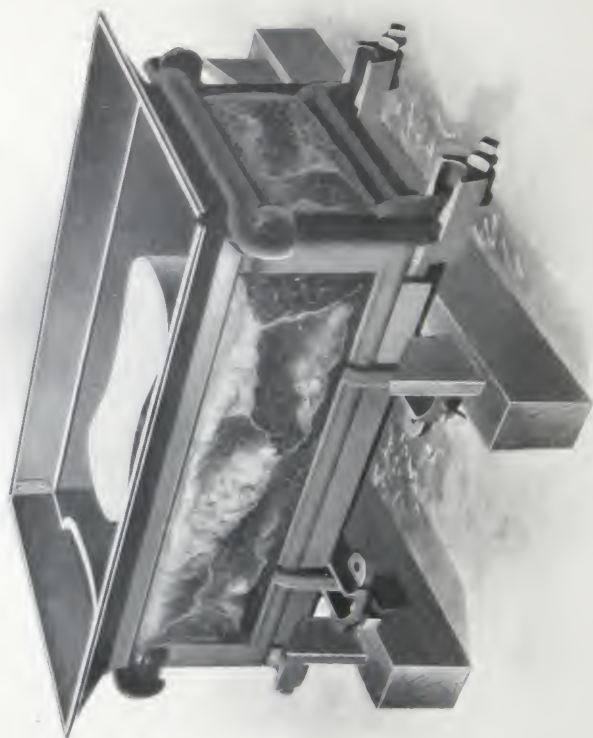
The best place to cure blocks is in the shade, therefore when they are green do not expose to the sun or wind. If made outdoors cover with canvas for two or three days, and to economize space, after the first tier is on the plank to cure build up the end and center and place another plank over it, and by so doing you can build three or four tiers high, which means a saving in space and covering.

When the blocks have stood from 8 to 12 hours, wet them thoroughly and then mix clear cement in water and take a whitewash brush and go over the face of the blocks and you have a light, strong block. As soon as a light crust appears on the outside give them water, and repeat this for five days or more. The blocks will be better and stronger by giving them plenty of water.

The harder you tamp the blocks the more solid and staple they will be. They cannot be cured by heat or wind, but when they begin to dry they must have plenty of water.

We would not advise using blocks in construction under ten days, and better results will be obtained if they cure thirty days. We have, however, used them five days after moulding, without experiencing difficulty. If it is necessary to use soon we would advise great care in handling.

When boards are not in use be careful to pile them away so they will not warp. But wet them before they are again put in the machine.



Century Cement Block Machine.

When blocks are cured so they can be removed from the boards we would advise another application with the whitewash brush of clear cement and water upon the face of the block as that will improve them very much and give a fine finish. Should you desire any color put it in the wash. Try this; but do not wait until the blocks are in the wall, for if you do it will cover up the mortar joints and will not look as well.

In mixing mortar to *lay blocks*, we would advise adding one-half cement and one-half quick lime. It will not set as quick as where you lay with clear cement and sand. The block being dry, draws the dampness out of the mortar too quickly, and it is apt to crumble and will not be as good as if you use one-half lime. The lime makes the mortar whiter which is a contrast. Notice illustrations.

THE SAVING EFFECTED BY THE USE OF THE CENTURY MACHINE

Two men and a boy make a good team and can work to advantage. 60 shovelfuls of sand and 100 pounds of cement will make 12 to 13 hollow blocks and 9 to 10 solid blocks. 300 pounds of cement and one yard of gravel will make 37 hollow blocks 8 x 10 x 20 at a cost of 10 cents each, \$3.70. They will take the place of 800 brick at a cost of \$8.00 per thousand, \$6.40. It will not cost as much to lay the blocks as it does brick, and you have in addition a hollow, dry wall, not requiring lathing or brown coating; all it needs is a putty coat. This is a saving of one-third of the cost of brick. Our machines make a chimney block that has no equal, and, as fire and heat do not affect cement, a cement chimney is much more durable and artistic than one erected of brick or stone and will last for ages.

THE CENTURY CEMENT BLOCK MACHINE

This machine is made in three sizes: (Order by number.)

No. 8 makes blocks size 8 x 8 x 16.

No. 10 makes blocks size 8 x 10 x 20.

No. 12 makes blocks size 8 x 12 x 24.

With each machine we include one extra set of doors, one tamper, one block handler and one board.

The CENTURY makes hollow, solid, rock face, plain, decorated



Residence of Dr. Robinson, Francis St., Jackson, Mich., Built Entirely of Portland Cement Hollow Blocks.
Cellar Wall of House Next to It Constructed of Same Material.

surface, or reproduction of natural stone of any style to suit the fancy of the builder.

We have solved the great problem of moulding blocks to fit around openings such as doors, windows, etc., by constructing special doors, by the use of which, together with sheet steel, the following sizes can be made:

On No. 12 machine, a door that will make $3\frac{3}{4}$ -inch, $5\frac{1}{2}$ -inch, 6-inch and $7\frac{1}{2}$ -inch blocks.

On No. 8 machine, a door that will make 3-inch, $3\frac{1}{2}$ -inch, 4-inch and $5\frac{1}{4}$ -inch blocks.

On No. 10 machine, a door that will make $3\frac{1}{2}$ -inch, $4\frac{1}{2}$ -inch, $5\frac{1}{2}$ -inch and 6-inch blocks.

THE CENTURY CURBING MACHINE

This machine is made expressly for making curbing and sidewalk slabs, making a slab 18 x 36 inches, any thickness desired.

No contractor can afford to be without this machine. Cement curbing is fast taking the place of stone, and can be seen on most any street in large cities. This machine includes one tamper, one extra set of doors and one board.

THE CENTURY WATER-TABLE AND SILL MACHINE

This machine makes window and door caps, sills, water-tables and steps, forming a block 10 x 12 x 60 inches and can be adjusted for any shorter lengths or narrowed to any size.

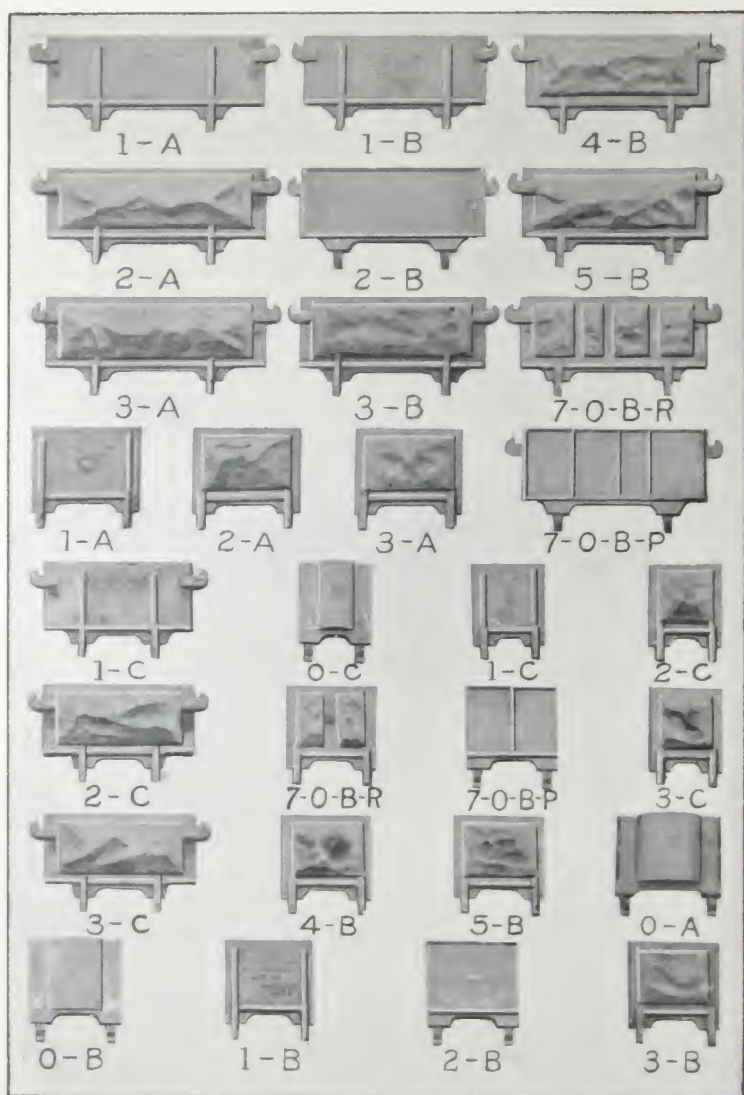
This machine includes one tamper and one board.

THE CENTURY MAKES A VARIETY OF THINGS

Should you wish registers in the walls take a plank and make it the size of the register desired and tamp the cement thoroughly around it and you have a perfectly fitting register space.

Be careful to wet the wooden pattern so that it is thoroughly damp. You can use the same idea for placing your joists in the block, but be careful in your measurements not to have the space too small as the blocks will be so hard you cannot chip them.

We would recommend using 6-inch blocks on front of the wall where you are going to put in the joist; then lay on your joist. Make blocks three inches thick and just long enough to put in between the joist and leave one inch space between for ventilation.



A Few of the Many Styles of Side and End Doors.

This can be done on an 8 x 8 x 16 machine by putting in a block at the end if you do not want it 16 inches long and by placing a shorter piece of plank lengthwise. Should you put in block 8 x 8 x 2 and a piece of plank in the center you would have two pieces of stone three inches thick and eight inches high and 14 inches long to fill the space between joists. Should you desire to lay a round or hexagon bay window, place short iron in the center of the machine crosswise, making two halves with rock face end doors. Then take two pieces of plank, say two inches thick, and saw them lengthwise in such a way that they will make two wedges; place them inside of the machine, sharp ends next to the end doors; tamp the cement between planks and when the inside doors come down, the blocks will come out ready to be used again. This, with plain end doors, will form a keystone. The same can be applied in forming stone for a gable of a house. Get the pitch of the roof and cut the wedge shape block by putting in steel across the center of the machine, then take two other pieces of steel and place them diagonally across from each end to the center, thereby making four pieces at one time. This gives you an idea and you can readily see that by placing in the machine a piece of wood and tamping the cement around it, it will leave any space in the block which you may desire. Be sure to have all wood patterns well soaked with water before tamping the cement around them, for if you do not the wood will draw the moisture from the cement and cause the wood to swell and crack the cement.

EXTRA PARTS

Different Styles of Doors for the CENTURY Machine:

A	designates doors for No. 12 machine.
B	" " " " 10 "
C	" " " " 8 "

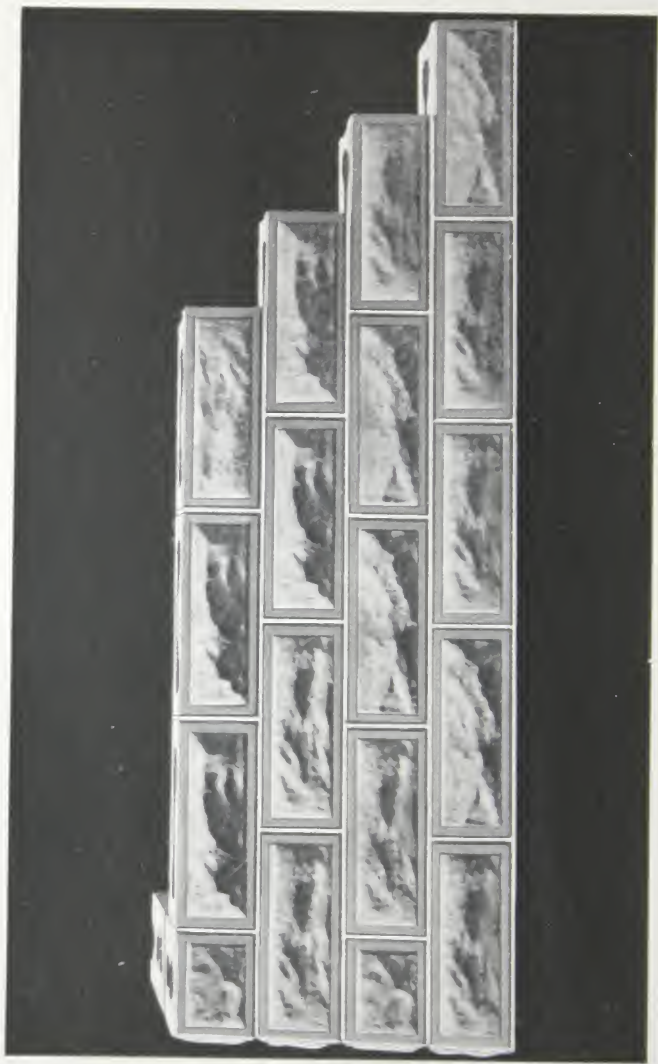
Always order by number and letter; state whether side or end doors are desired.

THE PATENTS

The CENTURY machine is strongly covered by patents.

The patent issued Sept. 9, 1902, is numbered 708532, and the one issued Dec. 16, 1902, is numbered 715986.

Copies of these patents can be obtained from the patent office for a small sum.



A Few of the Many Rock Face Portland Cement Hollow Blocks, Made With the Century Machine.

COMMENTS OF THE PRESS

"The use of Portland Cement is in its infancy, and the manufacture of it on a large scale is only beginning in this country. Cement promises to replace stone for all kinds of heavy foundations and other wall works, to replace stone for paving, to replace brick very largely for building and to replace lumber where lumber has been used. In fact, cement will soon be, next to steel, perhaps more than steel, the chief building material of this continent. Our houses will soon come to be of cement, and every day sees the field for the use of cement growing at a surprising ratio."—*Toronto World*, Sept. 23, 1902.

USE OF CEMENT IN BUILDINGS

"The increasing use of concrete in the erection of buildings at the present day has worked many radical departures from previous methods of construction, and the end is by no means in sight. Its use is especially desirable, not only in structures where great strength is desired, but the increase in insurance rates, the feeling of insecurity against fires, the high price of lumber, paints and oils, and the repairs continually required to keep the present style of dwelling houses comfortable and habitable will eventually, and in the near future lead to a more extended use of cement in building private houses. A steel frame structure with concrete walls, foundations and floors gives us the ideal building in which cleanliness, permanency and safety is desired. A building erected on these lines with a slate roof would need but few repairs and only at long intervals, and would be thoroughly fire, wind and weather proof. Being impervious to atmospheric changes the cement walls and floors would ensure an even temperature against the extremes of heat and cold, giving the much desired result of a house cool and dry in summer, and warm and dry in winter."—*Cement and Slate*, Sept., 1902.

SKY-SCRAPERS OF CEMENT

"For once that veteran inventor, Thomas A. Edison, has assumed a new role—that of prophet. Cement and steel he declares are to be the building materials of the future. Sky-scrapers will be built of framework of steel with walls of Portland Cement, the steel work incased in cement as well.

"Some of the fire insurance people will go out of business, so far as building risks are concerned, or write risks on the balance of what will be then obsolete buildings."—*Cement and Engineering News*, April, 1902.

"Mr. Bruce Coltrin, of Jackson, Mich., will erect sixteen concrete cottages, to be rented to workmen at \$7 to \$8 per month. Every part of the construction will be of Portland Cement, except doors and windows. The same party will erect a concrete store building during the present season."—*Cement and Engineering News*.

"The American farmer is giving close attention to the use of concrete, which he is beginning to use in place of wood, stone and brick. We have been receiving on an average five orders per day from farmers for books on the use of concrete construction, which is indisputable evidence that a large demand for cement is being created by the farming community."—*Cement and Engineering News*.



Residence on First Street, Jackson, Mich., Showing Porch Constructed of Portland Cement Blocks
Made With Century Machine.

CONCRETE BUILDINGS

"Selection of concrete to supersede steel in a 15-story building is of particular interest to the cement industry, as the success of this innovation in building will open up a wonderful market for that product and give an impetus to the industry that will be of exceedingly great benefit. Architects have been slow to recommend the substitution of concrete for steel for high buildings. The Ingalls building which is to be put up in Cincinnati is to be 15 stories high, with retaining walls less than a foot in thickness with imbedded steel rods. A mass of concrete columns will support the floors, which will be of solid slabs of concrete, six inches thick. A saving of one foot to the floor will thus be made, which will amount to 15 feet in this building. The difficulty of securing structural steel on time has long disturbed and delayed building here and elsewhere. This condition caused architects all over the country to cast about for a material that would make buildings absolutely fireproof and at the same time avoid that phase of construction which, in case of fire, caused a warping of the structural skeleton work. That concrete has been used in many instances in low buildings with marked satisfaction has long been a matter of history, but whether concrete would stand the strain incident to tall buildings was a matter of speculation until a practical demonstration was made in many cities of Europe. It is asserted on the highest authority that by degrees steel work is being eliminated from European buildings. The architects say that the structure when completed will be the handsomest in the city. The interior walls will, as soon as completed, be ready for the plaster. They claim that if the building is filled with inflammable matter and a fire ensues, burning will occasion but little loss to the structure proper. They predict that this style of construction must of necessity supersede all other kinds of fireproof construction."—*Construction News*, July, 1902.

"The Wolverine Brass Co., of Grand Rapids, Mich., is now erecting its new building for its casting department, the first building in the city to be constructed of hollow cement blocks. The blocks are laid in Portland Cement, giving solid joints and making of the wall a practical structural unit. The hollow interiors of the blocks form conduits in the walls in which gas and water pipes may be laid and give an air space which, it is claimed, will moderate extremes of temperature in summer and winter."—*Cement and Stone*, October, 1902.

"The Oklahoma City Stone Manufacturing Co. has just completed a large four-story building for the Armour Packing Company, constructed entirely of hollow Portland Cement building blocks."—*Municipal Engineering*, December, 1902.

"E. R. Pelton, of Vermillion, Ohio, will erect a large Portland Cement concrete apartment house on Highland avenue near Detroit street, Cleveland, Ohio."—*Cement*.

"A hotel is under construction at Ludington, Mich., costing \$13,000. It will be built entirely of Portland Cement concrete."—*Cement and Stone*, October, 1902.

"Potoskey, Mich., has erected four concrete houses, made of moulded cement building blocks. A factory for the manufacture of these blocks is now under way."—*Cement and Engineering News*.

"Architects John Fraser & Son have finished plans for a twelve-story store and office building, and two eight-story store and office buildings, to be erected in the business section of Philadelphia. All three buildings will be constructed on improved plans. Portland Cement concrete will be used exclusively. No steel skeleton work will be used."—*Cement and Engineering News*.

"Cement promises to replace stone for all kinds of heavy foundations, to replace brick very largely for building, to replace lumber in many uses. It will be next to steel, and perhaps more than steel, the chief building material of this continent. Every day sees the field for the use of cement growing at a surprising ratio."—*St. Paul Globe*.

PORTLAND CEMENT CONSUMPTION

"The unusual large demand for Portland Cement during the present season, together with the constantly increasing output, has evoked numerous inquiries of what becomes of the cement produced, and in what class of constructions the greatest amount is consumed.

"In government work vast quantities of cement are used in the construction of forts, batteries, gun emplacements, dams and locks, sea walls, breakwaters, piers, docks and jetties, lighthouses and marine dry docks. Large quantities of cement are being used in rough concrete masonry for pier foundations for office buildings, one noticeable instance being the First National Bank building at Chicago, now under way. This building will be carried on 110 pier foundations from 9 to 12 feet in diameter by 101 feet deep, constructed entirely of cement concrete. Chicago architects are advocating deep pier foundations, carried down to bed rock—built up of cement concrete, as the only safe and reliable foundation for high buildings to be constructed in the future in Chicago. This will call for large orders of Portland Cement. In grain elevators, large factory buildings and power houses, concrete masonry is the favorite material. The railways find it economical to use concrete for piers, bridges, culverts, retaining walls for elevating and depressing their tracks, for floors and roof coverings in shops and depots.

"The railways are likewise beginning the erection of grain elevator tanks at terminal points in armored concrete."—*Cement and Engineering News*, August, 1902.

CEMENT HOUSES SAVE FUEL

"Portland Cement is the finest non-conducting fire proof material ever produced. It is as nearly impervious to heat as anything ever discovered. It costs only about one-half in fuel to heat a large residence so constructed than if it had been built in the ordinary way."—*Detroit Tribune*.

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